OIPE
JUN 2 8 2004
PATENT & TRADEMARK OFFICE
JC11

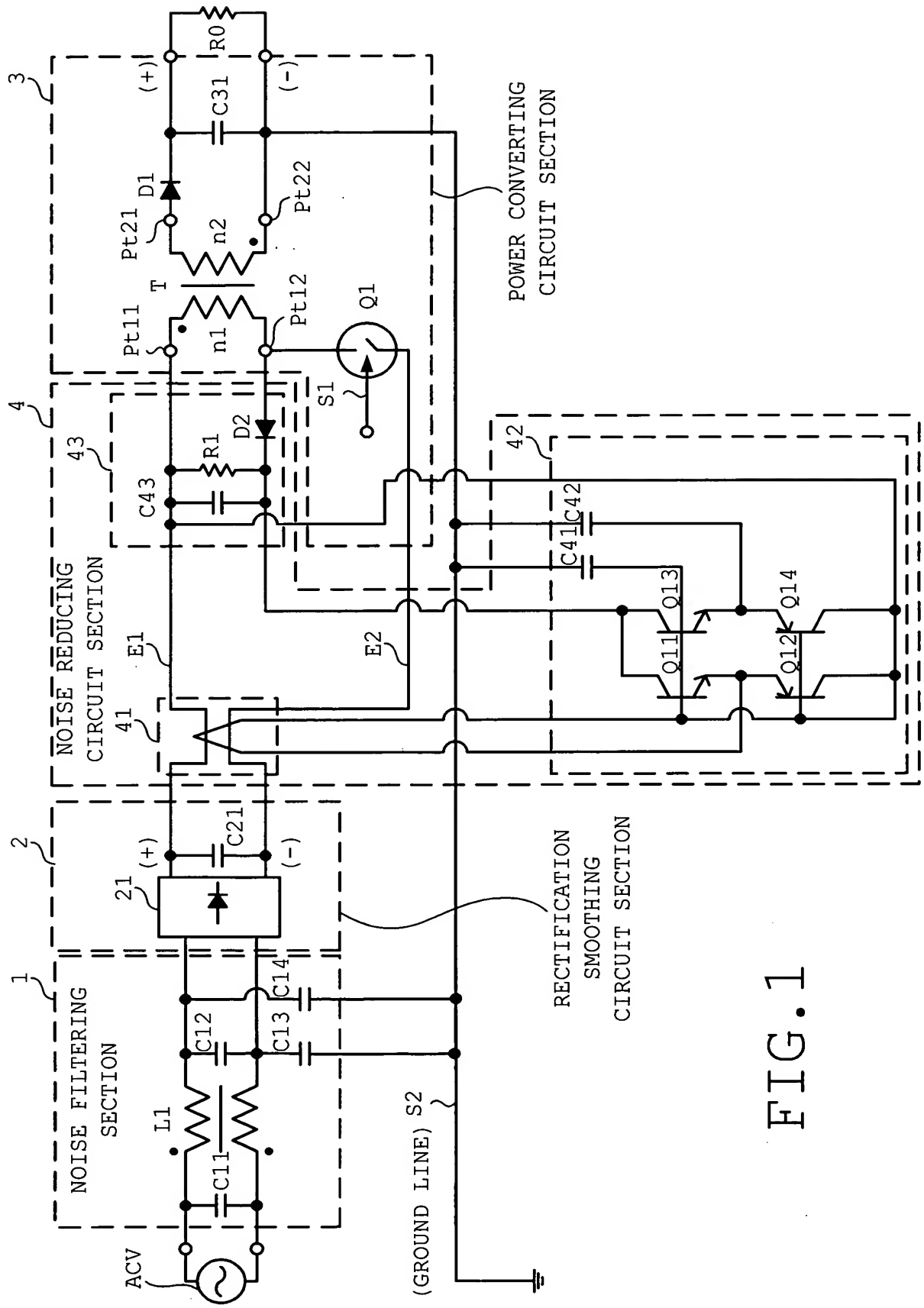


FIG.1

FIG.2A

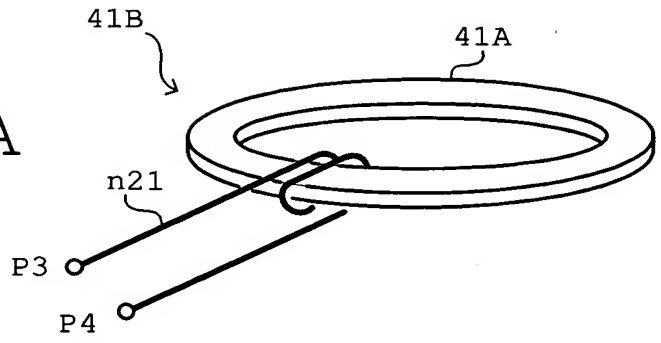


FIG.2B

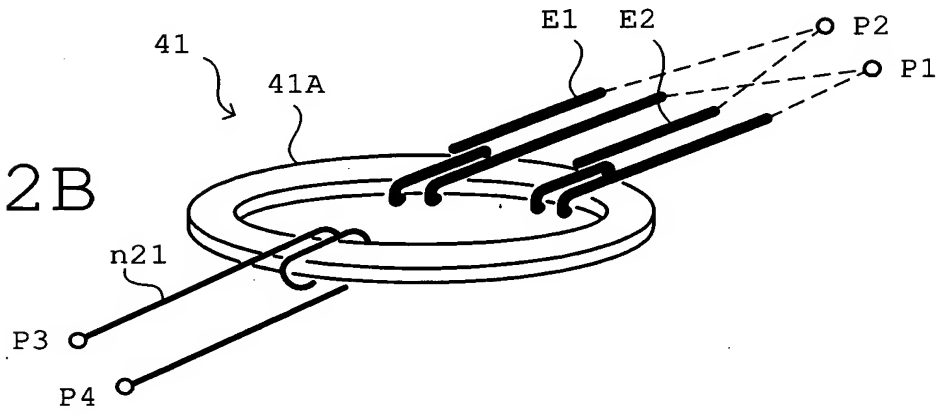
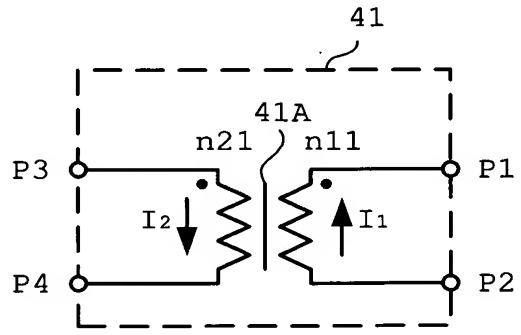


FIG.2C



WINDING NUMBER OF n11 / WINDING NUMBER OF n21 = 1

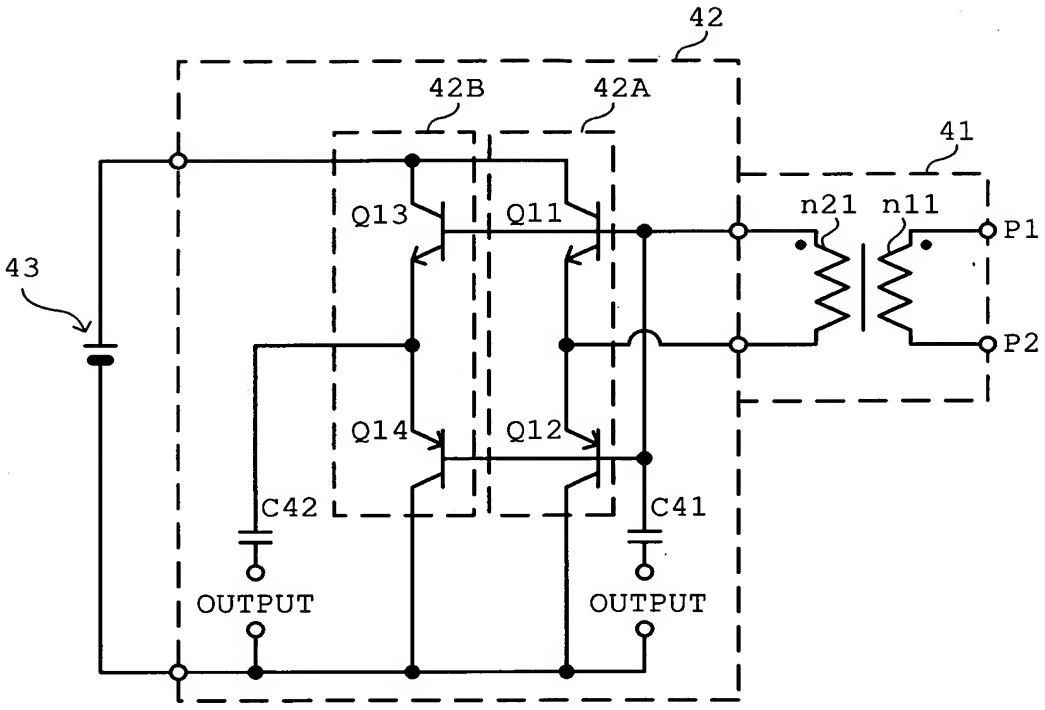

42
42B
42A
41
43
Q13
Q11
n21
n11
P1
P2
Q14
Q12
C42
C41
OUTPUT
OUTPUT

FIG.3

FIG.4A

FIG.4B

FIG.4C

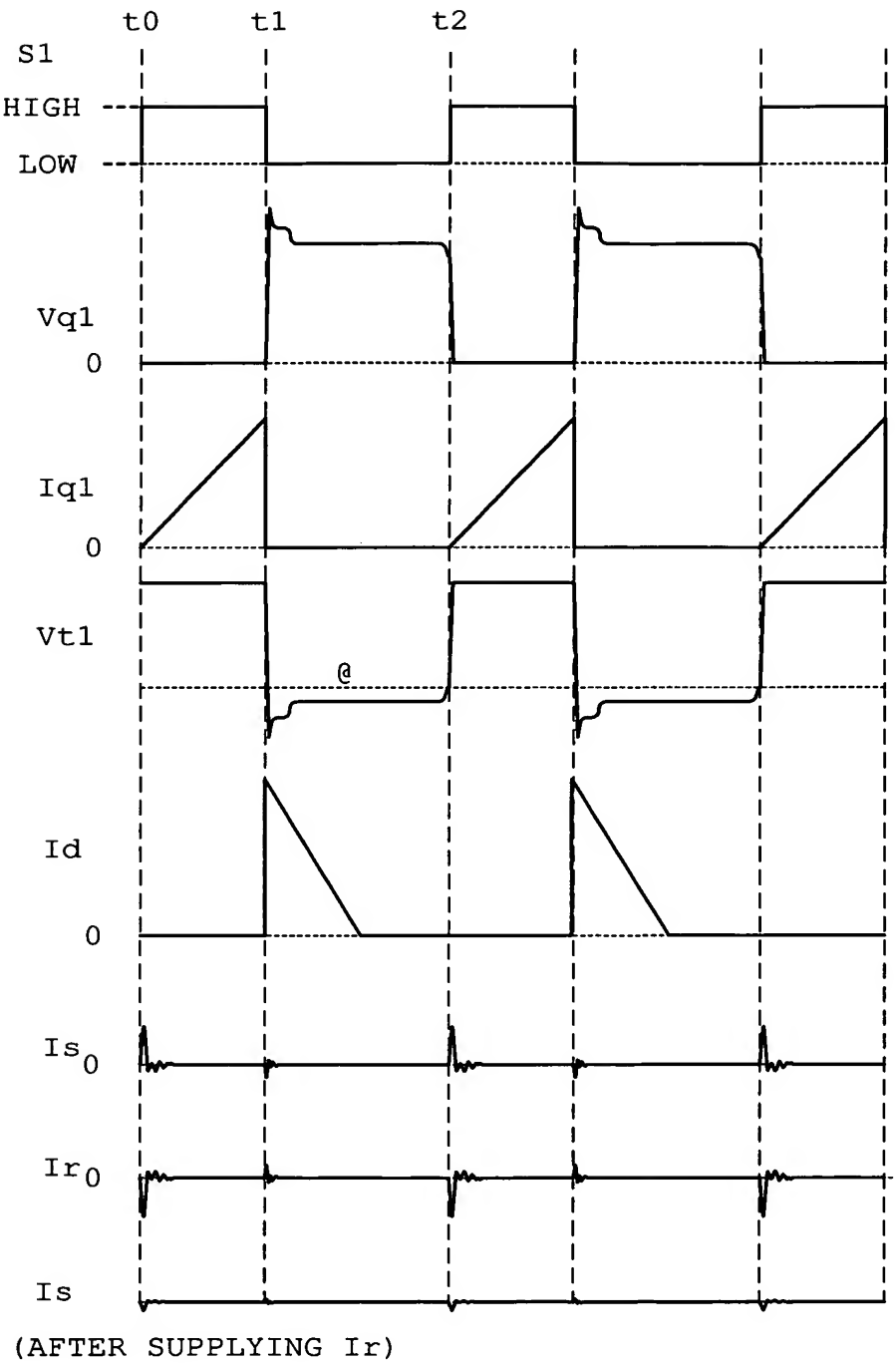
FIG.4D

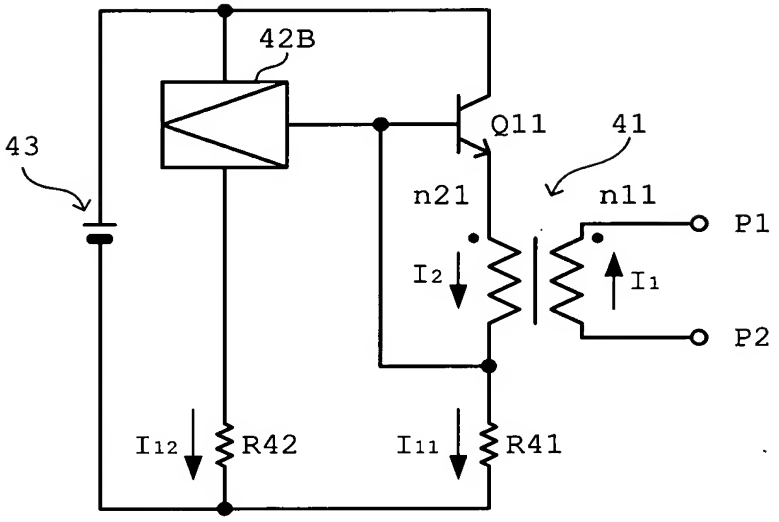
FIG.4E

FIG.4F

FIG.4G

FIG.4H





$i_1 = i + i * (r41/r42)$ (i_1: CURRENT VALUE OF CURRENT I_1)

$i_2 = i$ (i_2: CURRENT VALUE OF CURRENT I_2)

$i_{11} = i$ (i_{11}: CURRENT VALUE OF CURRENT I_{11})

$i_{12} = i * (r41/r42)$ (i_{12}: CURRENT VALUE OF CURRENT I_{12})

FIG. 5

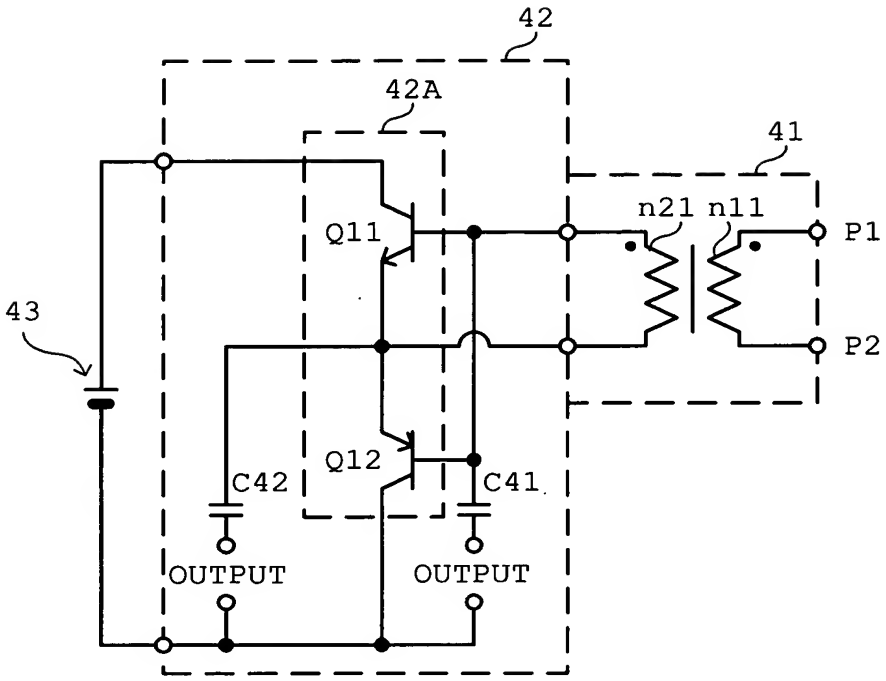
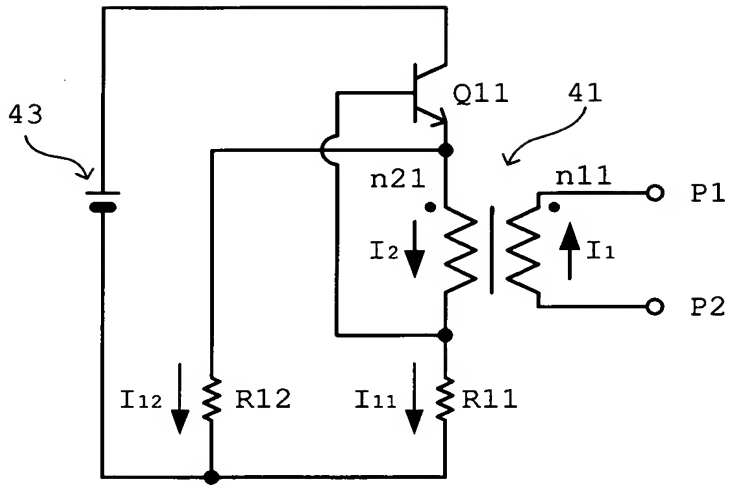


FIG. 6



$i_1=i+i*(r11/r12)$ (i_1:CURRENT VALUE OF CURRENT I_1)

$i_2=i$ (i_2:CURRENT VALUE OF CURRENT I_2)

$i_{11}=i$ (i_{11}:CURRENT VALUE OF CURRENT I_{11})

$i_{12}=i*(r11/r12)$ (i_{12}:CURRENT VALUE OF CURRENT I_{12})

FIG.7

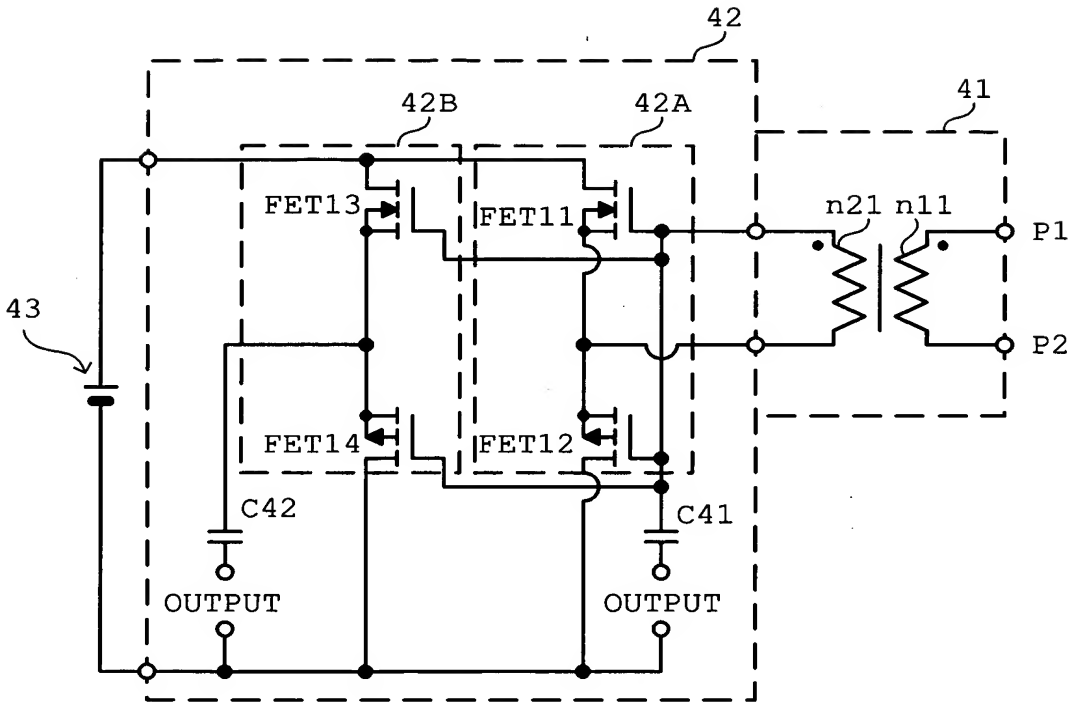

42
42B
42A
41
FET13
FET11
n21
n11
P1
P2
43
FET14
FET12
C42
C41
OUTPUT
OUTPUT

FIG. 8

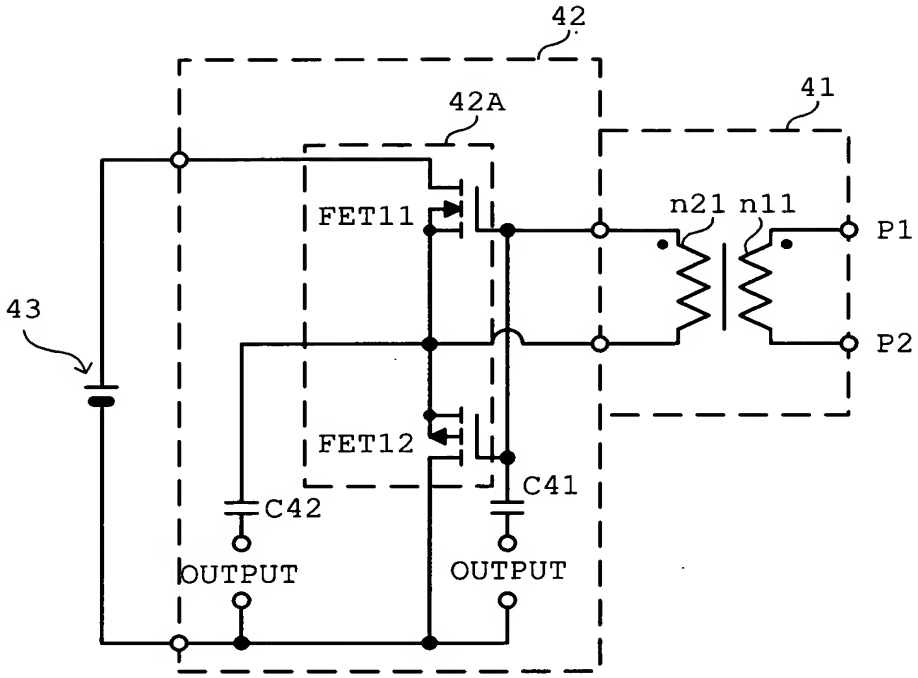


FIG.9

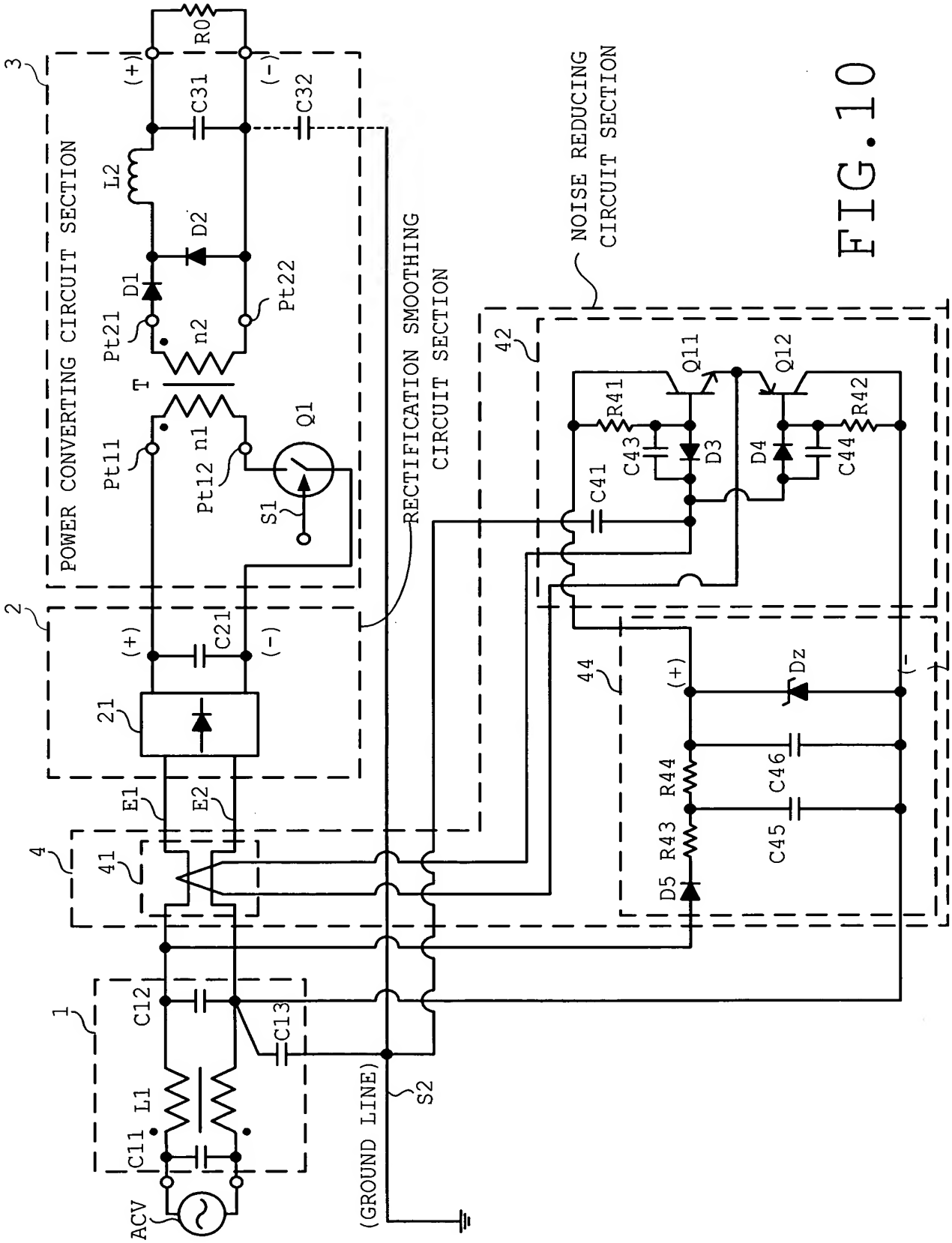

3
POWER CONVERTING CIRCUIT SECTION
R0
(+)
(-)
C31
C32
L2
D2
D1
Pt21
Pt22
n2
T
Pt11
Pt12
n1
Q1
S1
2
RECTIFICATION SMOOTHING CIRCUIT SECTION
(+)
(-)
C21
21
E1
E2
4
41
1
C12
C13
C11
L1
ACV
(GROUND LINE)
S2
NOISE REDUCING CIRCUIT SECTION
42
Q11
Q12
R41
R42
C41
C43
C44
D3
D4
44
(+)
(-)
Dz
C46
C45
R44
R43
D5

FIG.10

FIG.11A

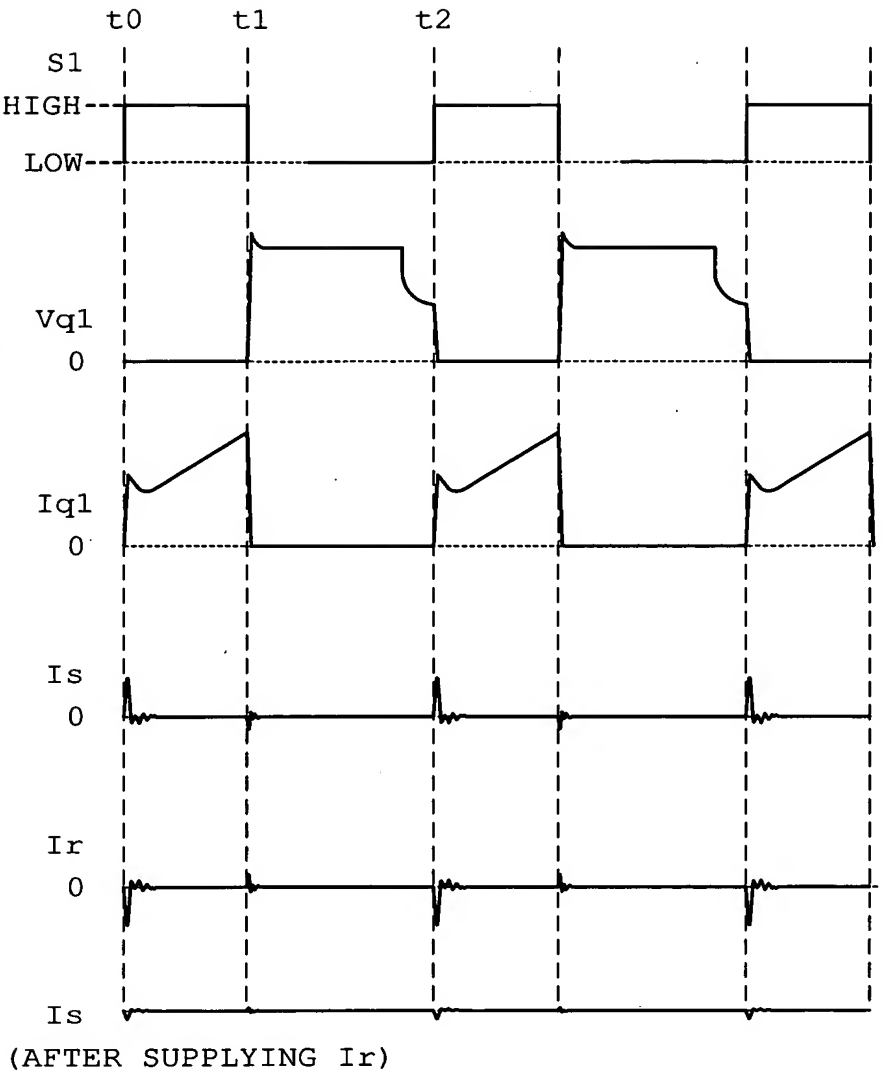
FIG.11B

FIG.11C

FIG.11D

FIG.11E

FIG.11F



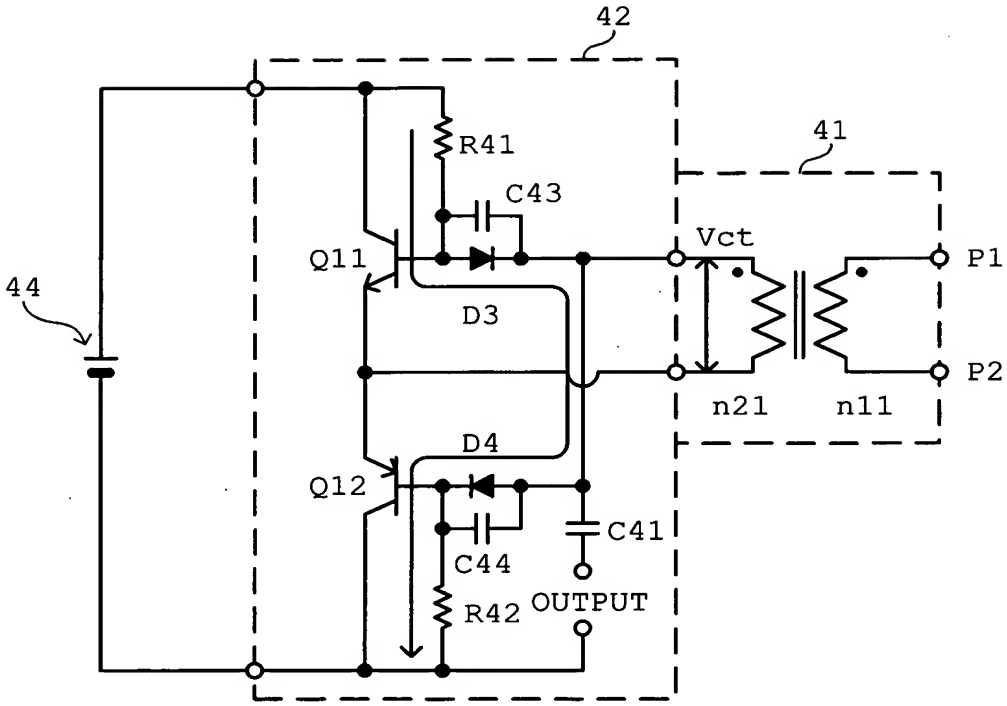

42
41
R41
C43
Q11
D3
Vct
P1
P2
44
n21
n11
D4
Q12
C41
C44
R42
OUTPUT

FIG.12

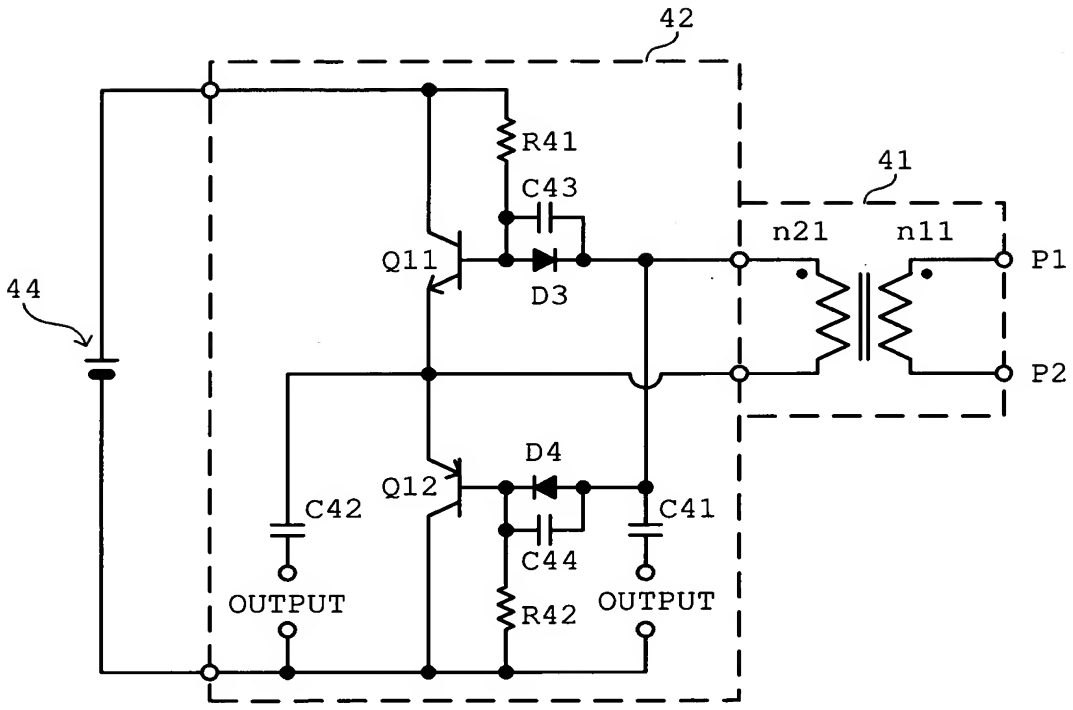

42
41
R41
C43
Q11
D3
n21
n11
P1
P2
44
D4
Q12
C42
C41
C44
R42
OUTPUT
OUTPUT

FIG.13

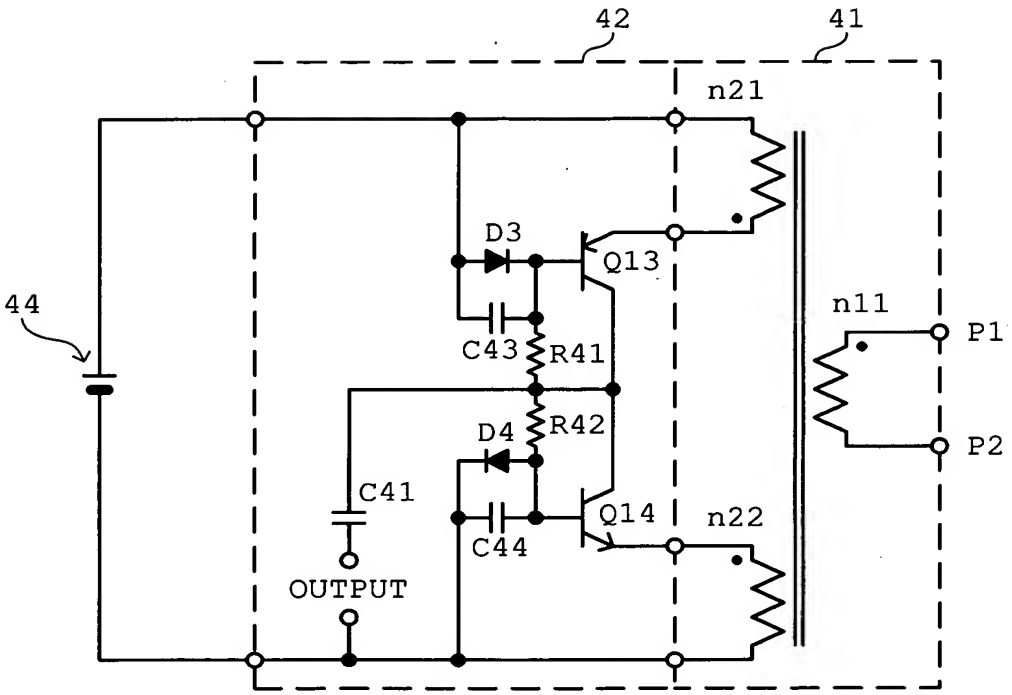

42
41
n21
D3
Q13
44
n11
P1
C43
R41
R42
D4
P2
C41
Q14
n22
C44
OUTPUT

FIG.14

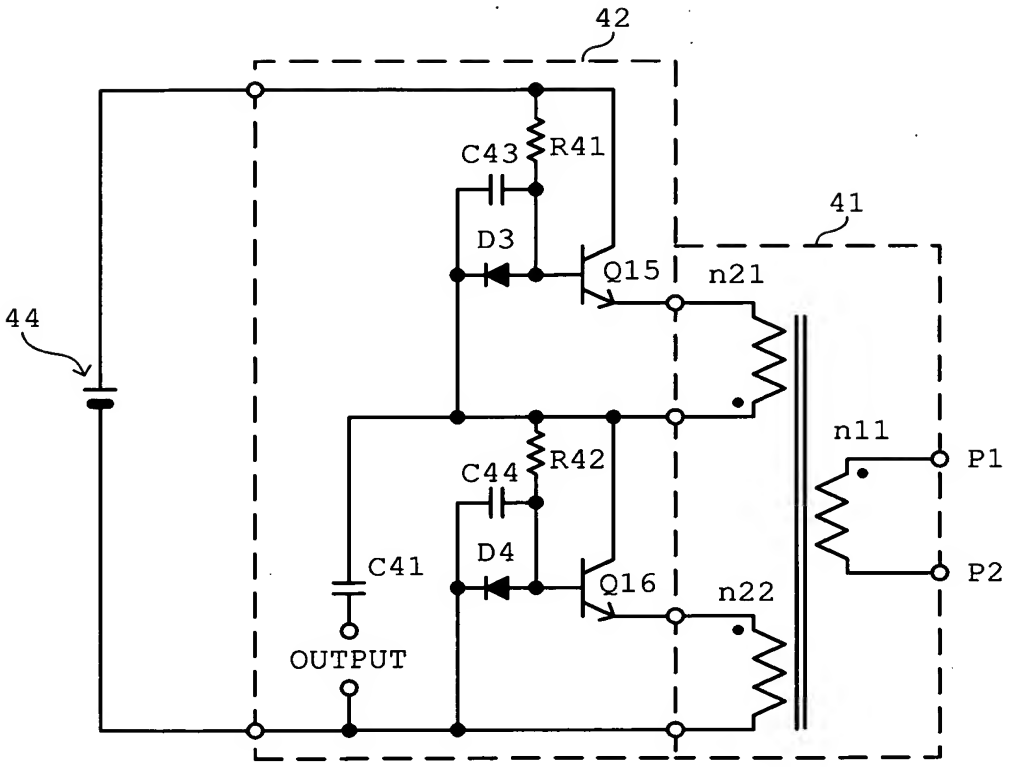

42
41
44
C43
R41
D3
Q15
n21
n11
P1
P2
R42
C44
D4
Q16
n22
C41
OUTPUT

FIG.15

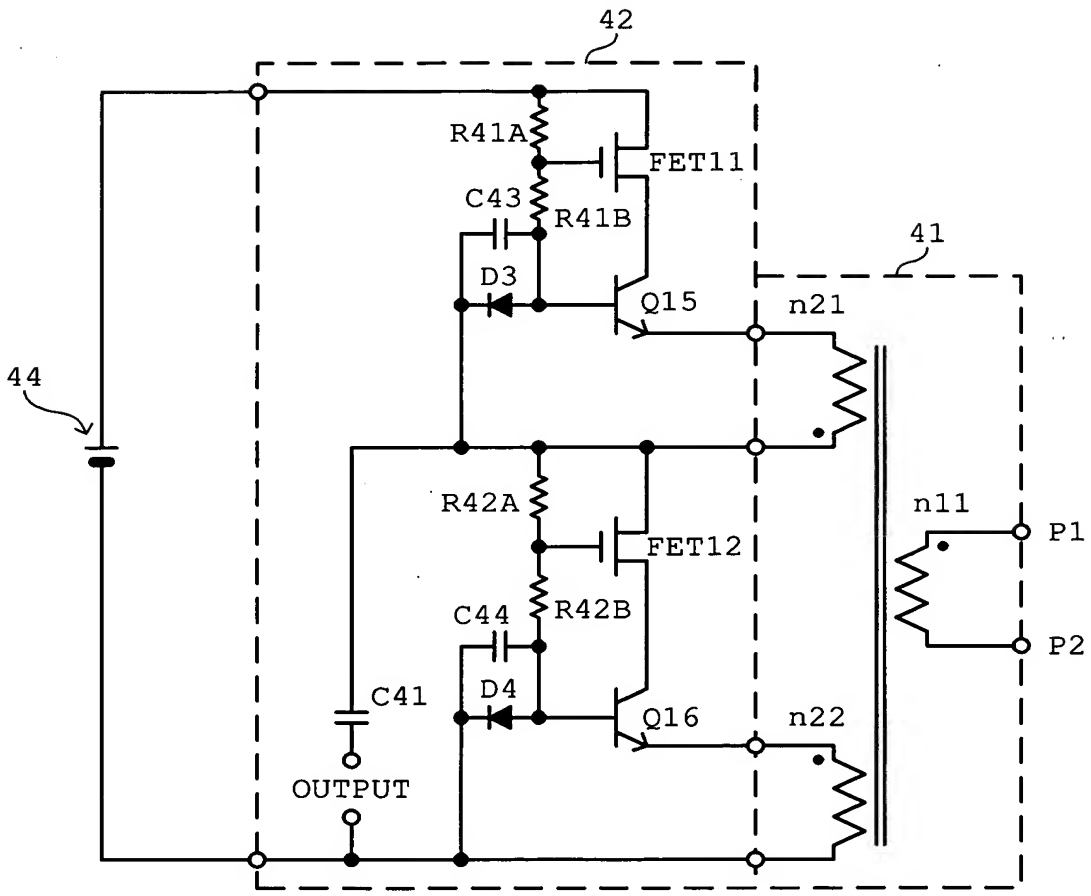

42
R41A
FET11
C43
R41B
41
D3
Q15
n21
44
R42A
n11
P1
FET12
C44
R42B
P2
C41
D4
Q16
n22
OUTPUT

FIG.16

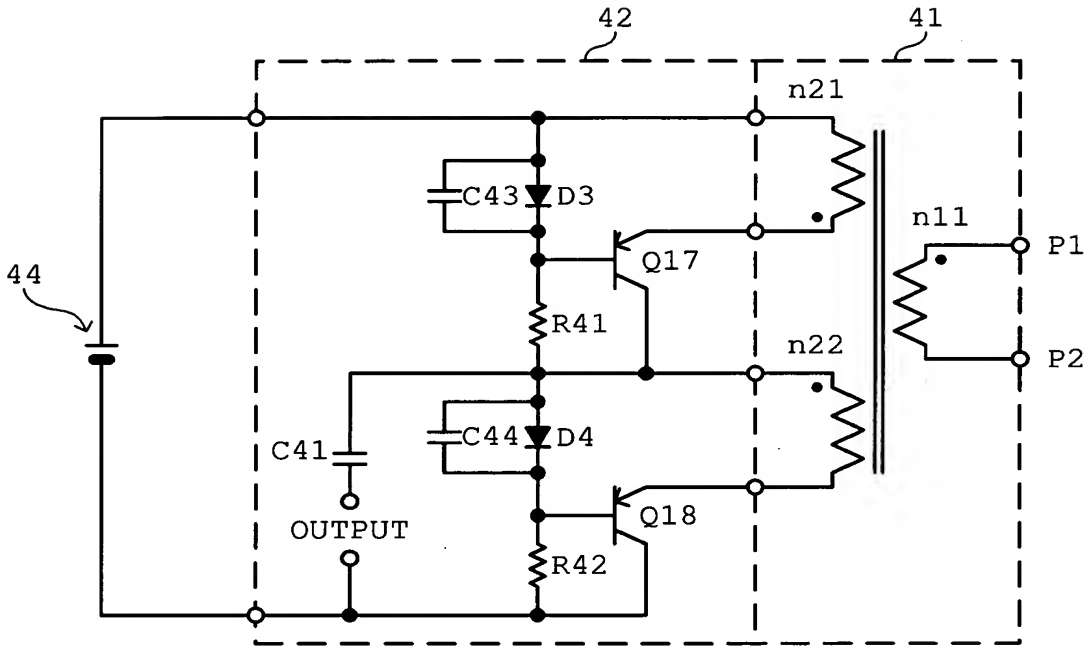

42
41
n21
C43
D3
n11
P1
Q17
44
R41
n22
P2
C41
C44
D4
OUTPUT
Q18
R42

FIG.17

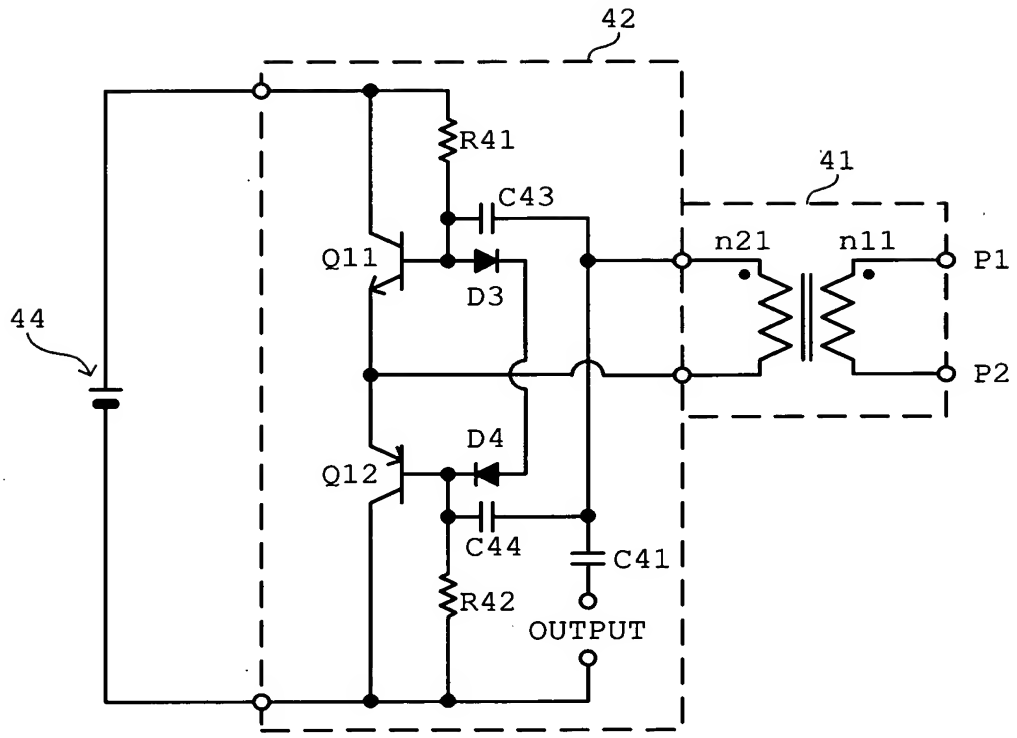


FIG.18

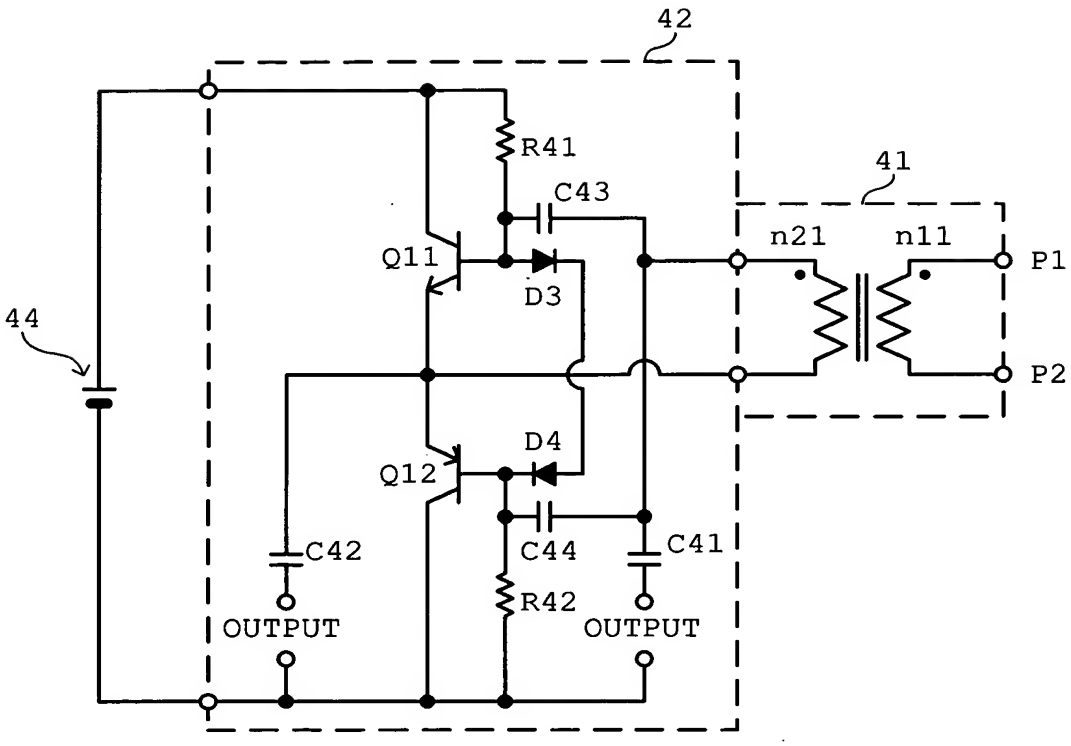

42
41
R41
C43
Q11
D3
n21
n11
P1
P2
44
D4
Q12
C42
C44
C41
R42
OUTPUT
OUTPUT

FIG.19

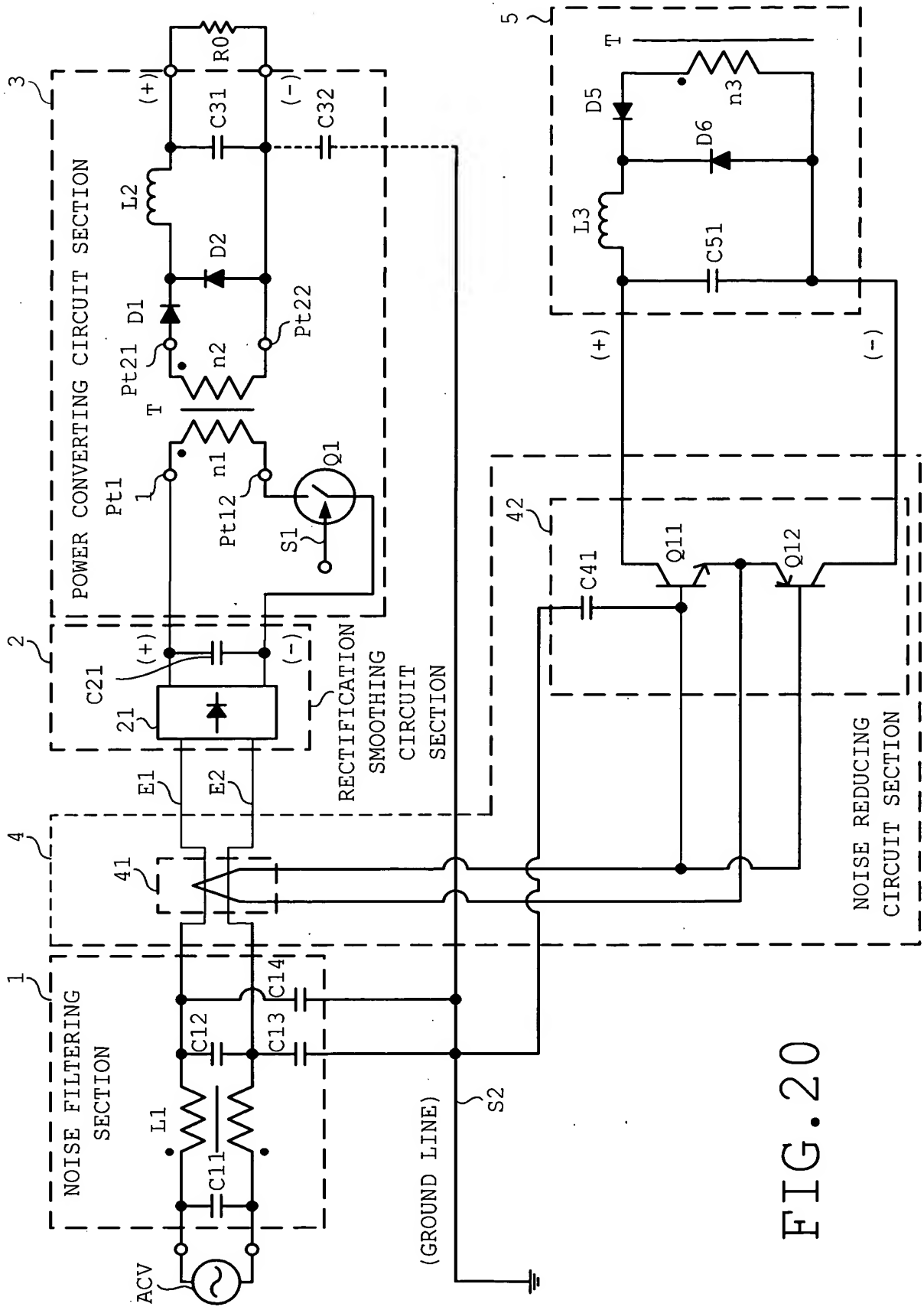

1
NOISE FILTERING SECTION
2
RECTIFICATION SMOOTHING CIRCUIT SECTION
3
POWER CONVERTING CIRCUIT SECTION
4
5
NOISE REDUCING CIRCUIT SECTION
ACV
L1
C11
C12
C13
C14
R0
C31
C32
L2
D1
D2
Pt21
Pt22
n2
T
Pt1
n1
Pt12
Q1
S1
C21
21
E1
E2
41
42
C41
Q11
Q12
D5
D6
n3
L3
C51
(+)
(-)
(GROUND LINE)
S2

FIG.20

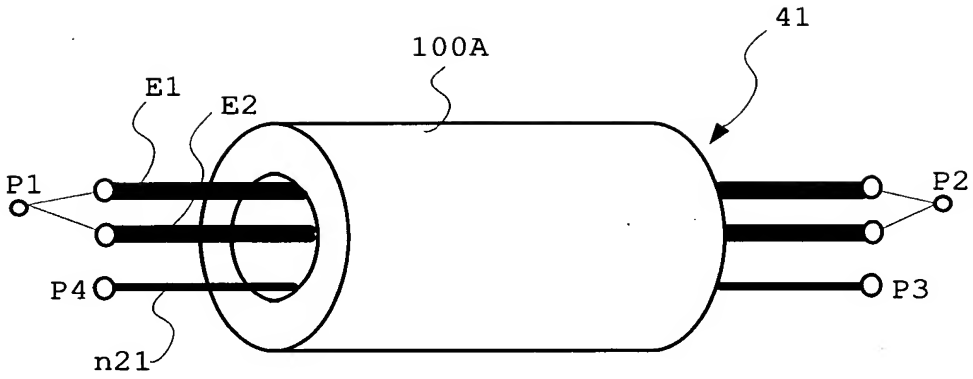


FIG.21

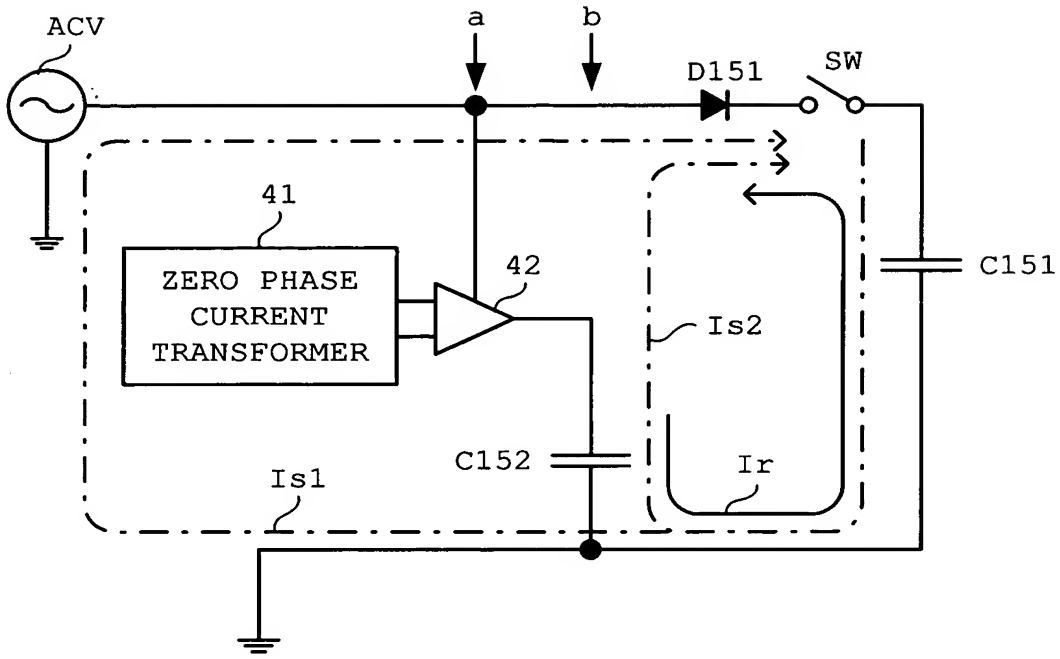

ACV
a
b
D151
SW
41
ZERO PHASE
CURRENT
TRANSFORMER
42
C151
Is2
C152
Ir
Is1

FIG.22

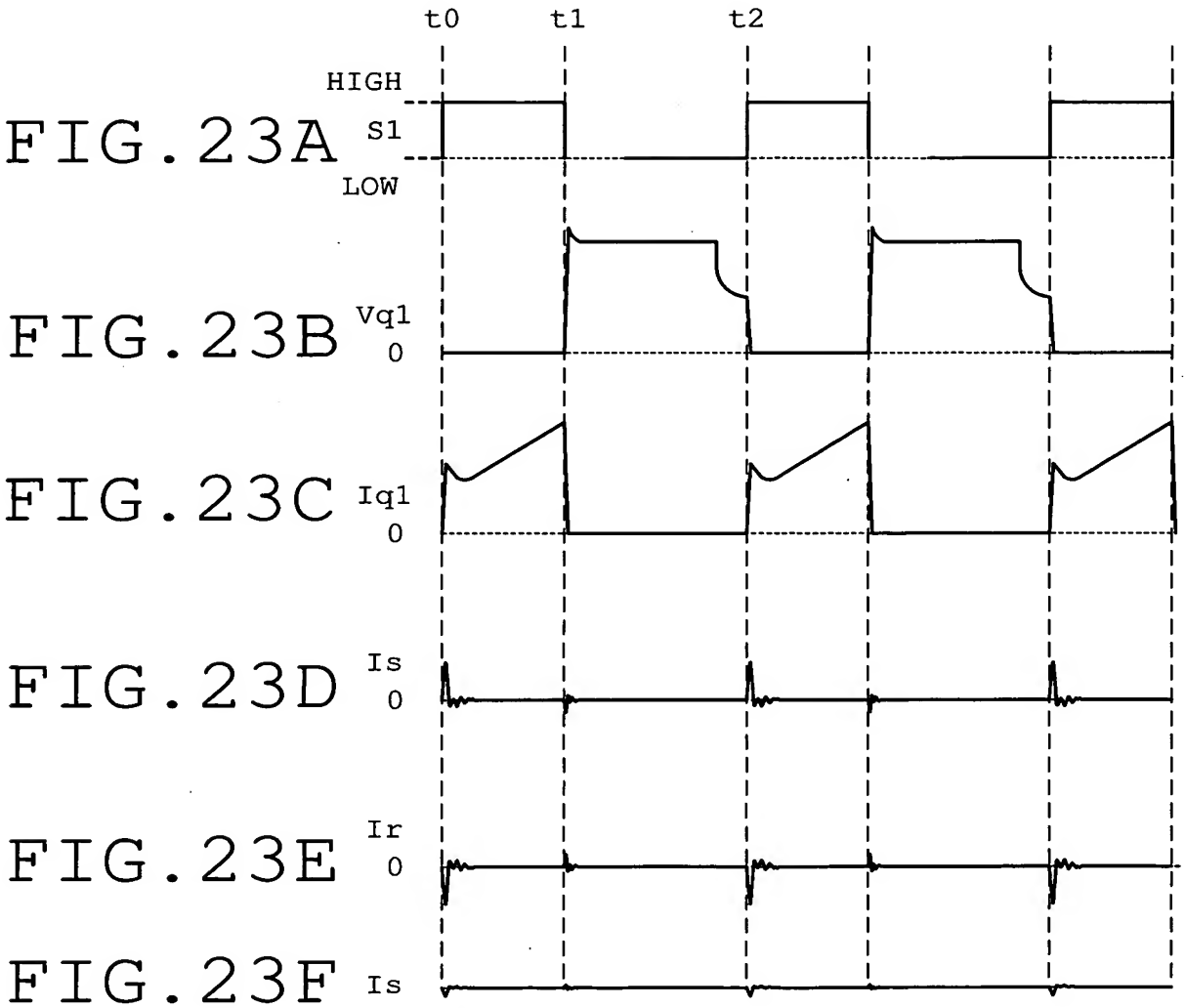


FIG.23A

FIG.23B

FIG.23C

FIG.23D

FIG.23E

FIG.23F

(AFTER SUPPLYING Ir)

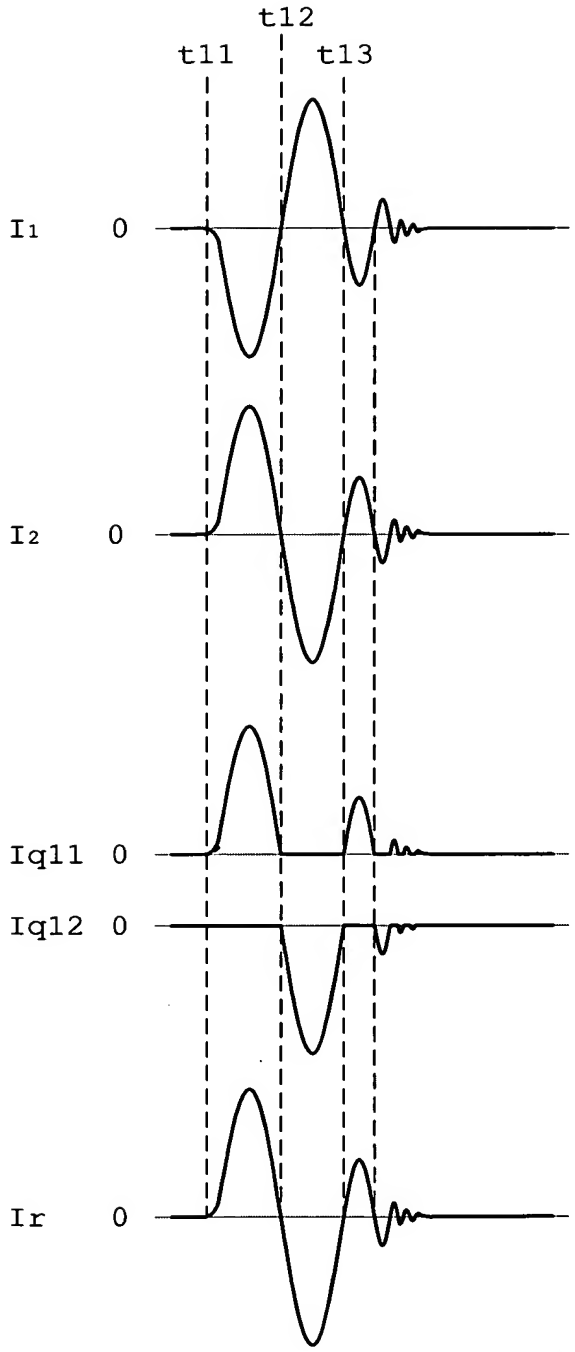
FIG.24A

FIG.24B

FIG.24C

FIG.24D

FIG.24E



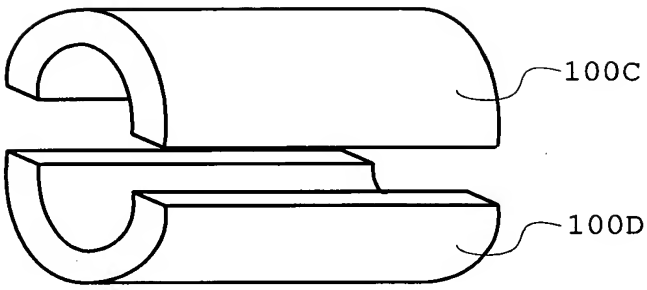


FIG.25

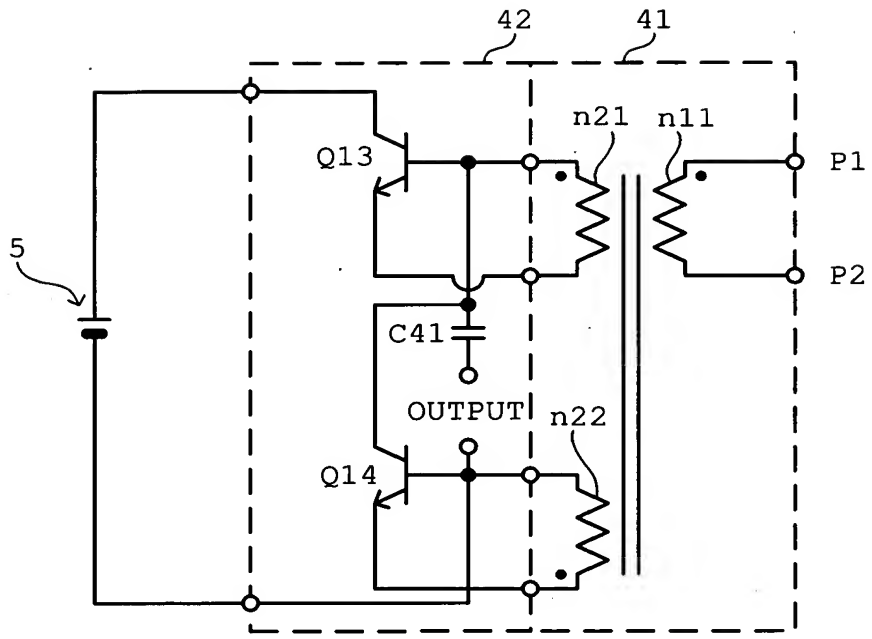


FIG.26

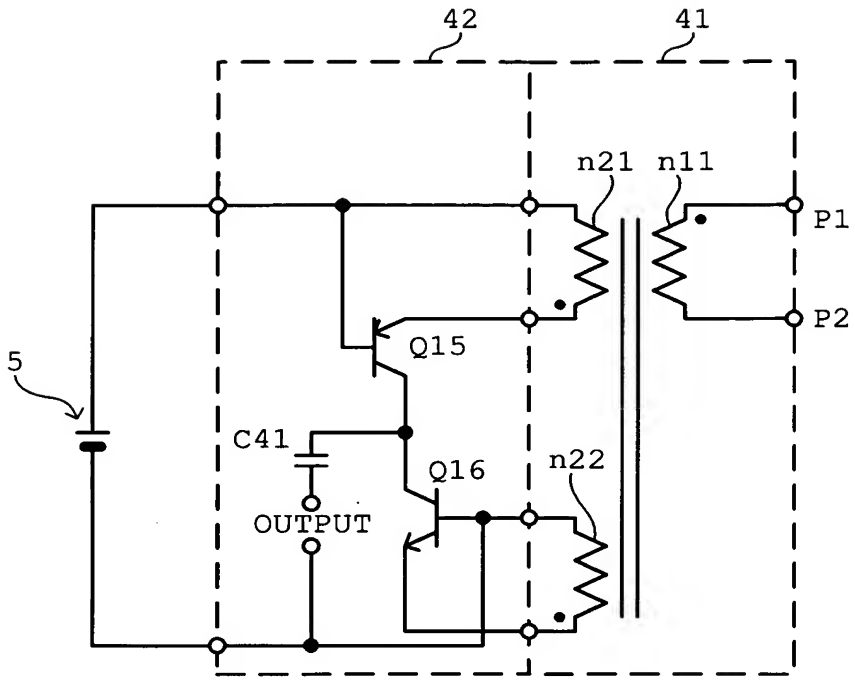


FIG.27

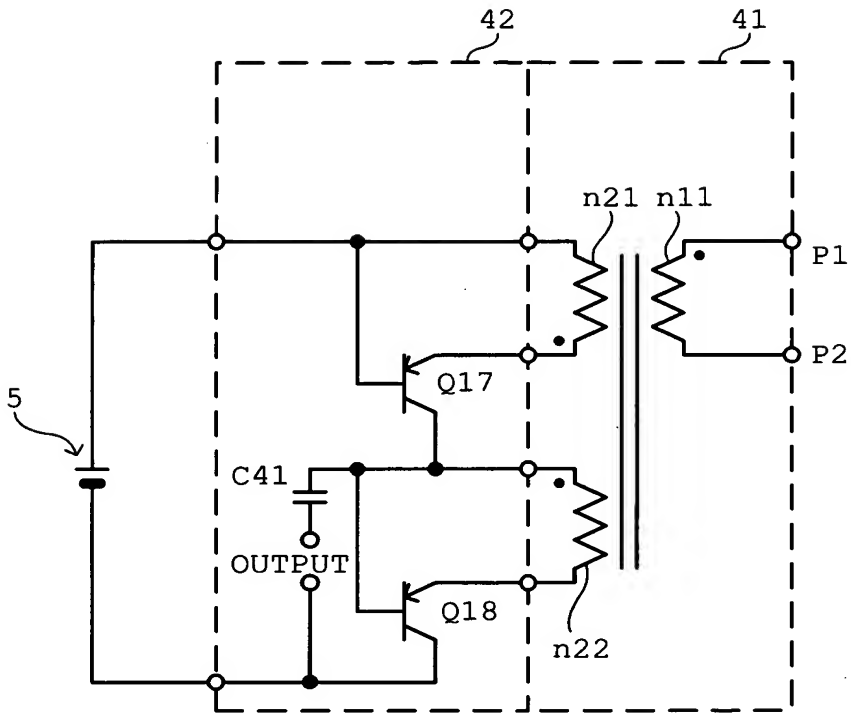


FIG.28

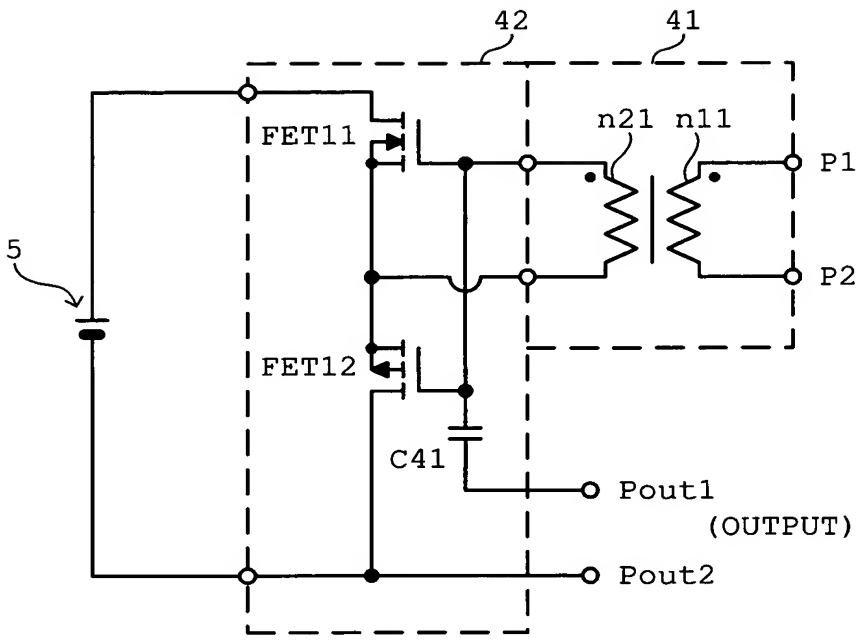


FIG.29

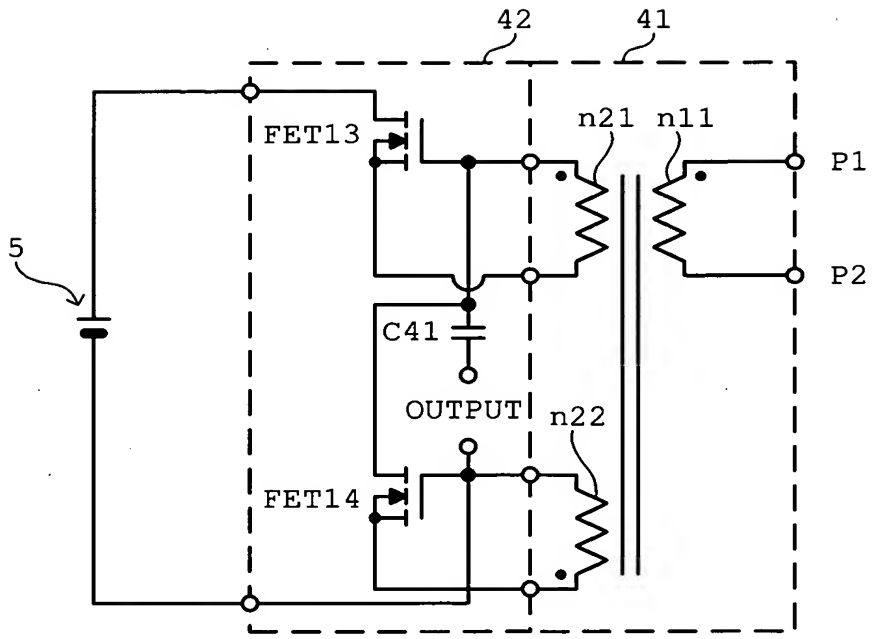


FIG.30

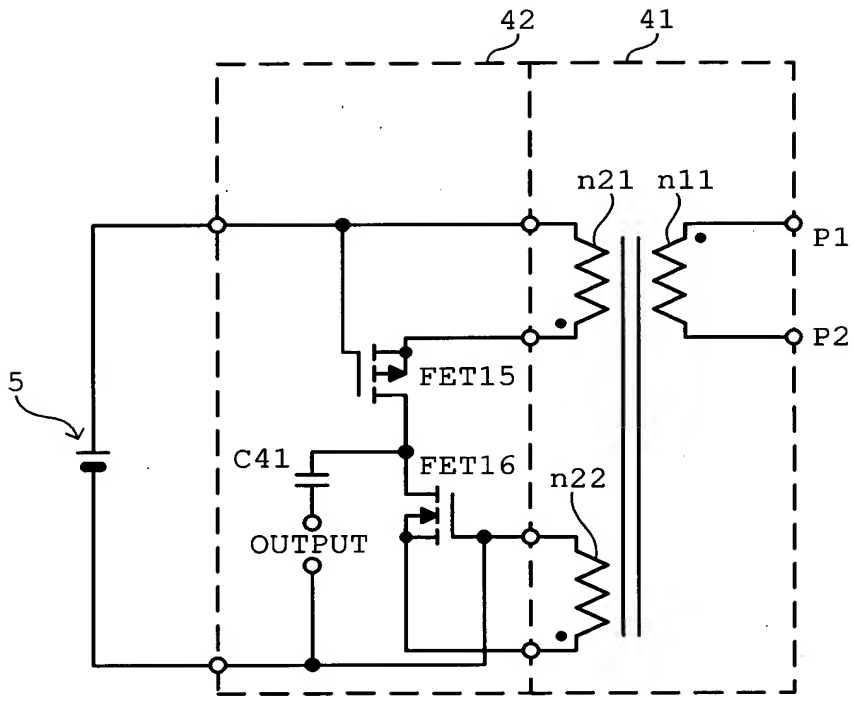


FIG.31

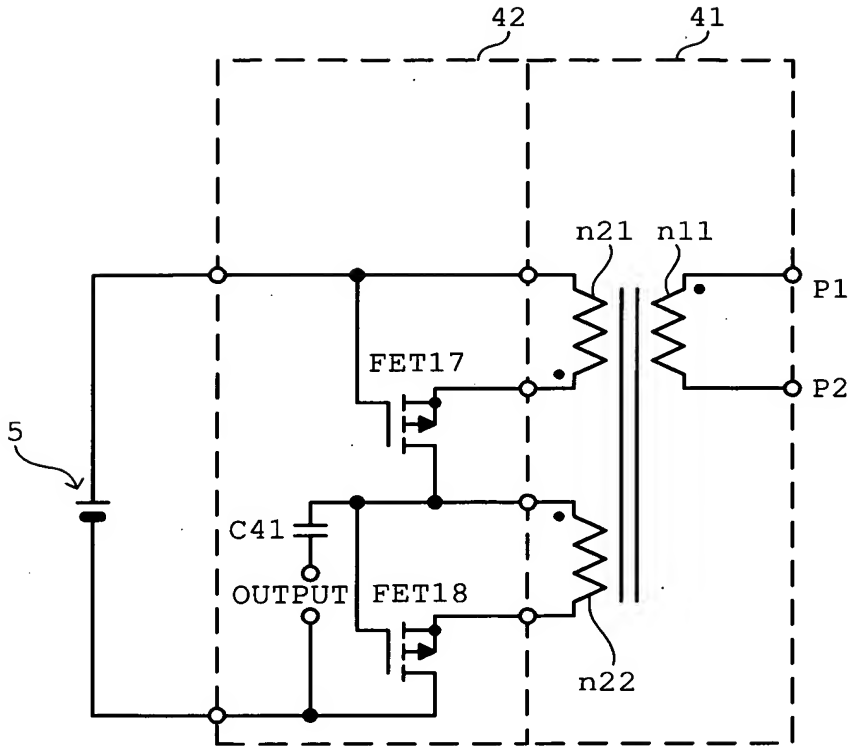


FIG.32

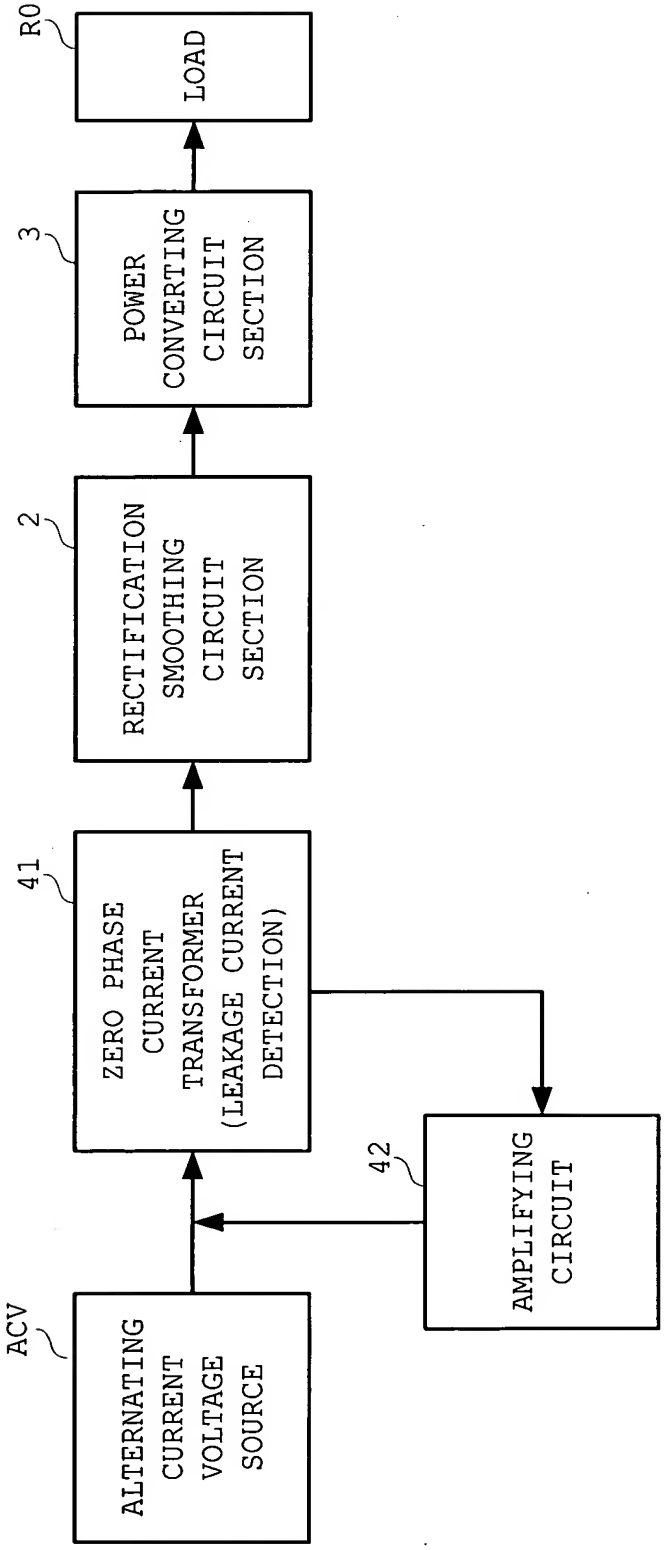

R0
LOAD
3
POWER CONVERTING CIRCUIT SECTION
2
RECTIFICATION SMOOTHING CIRCUIT SECTION
41
ZERO PHASE CURRENT TRANSFORMER (LEAKAGE CURRENT DETECTION)
42
AMPLIFYING CIRCUIT
ACV
ALTERNATING CURRENT VOLTAGE SOURCE

FIG.33

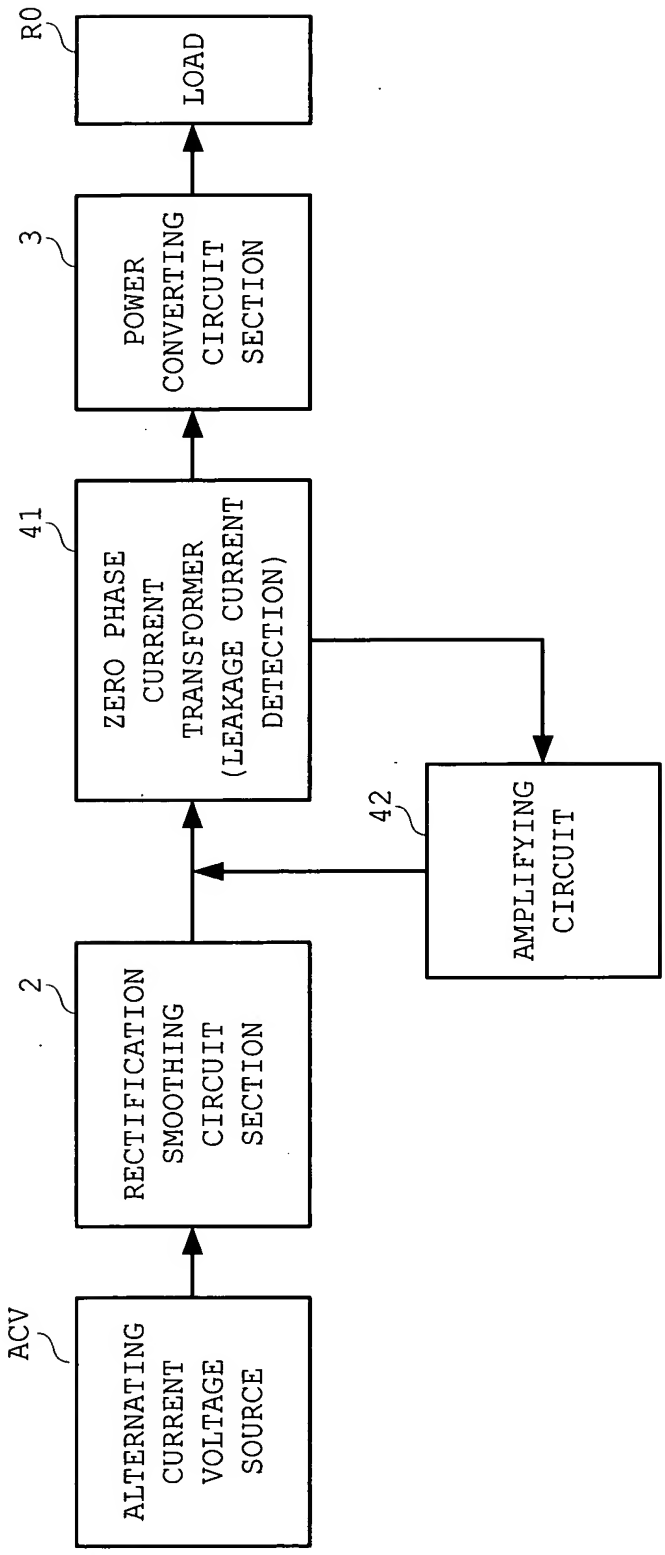

ACV
ALTERNATING CURRENT VOLTAGE SOURCE
2
RECTIFICATION SMOOTHING CIRCUIT SECTION
41
ZERO PHASE CURRENT TRANSFORMER (LEAKAGE CURRENT DETECTION)
42
AMPLIFYING CIRCUIT
3
POWER CONVERTING CIRCUIT SECTION
R0
LOAD

FIG.34

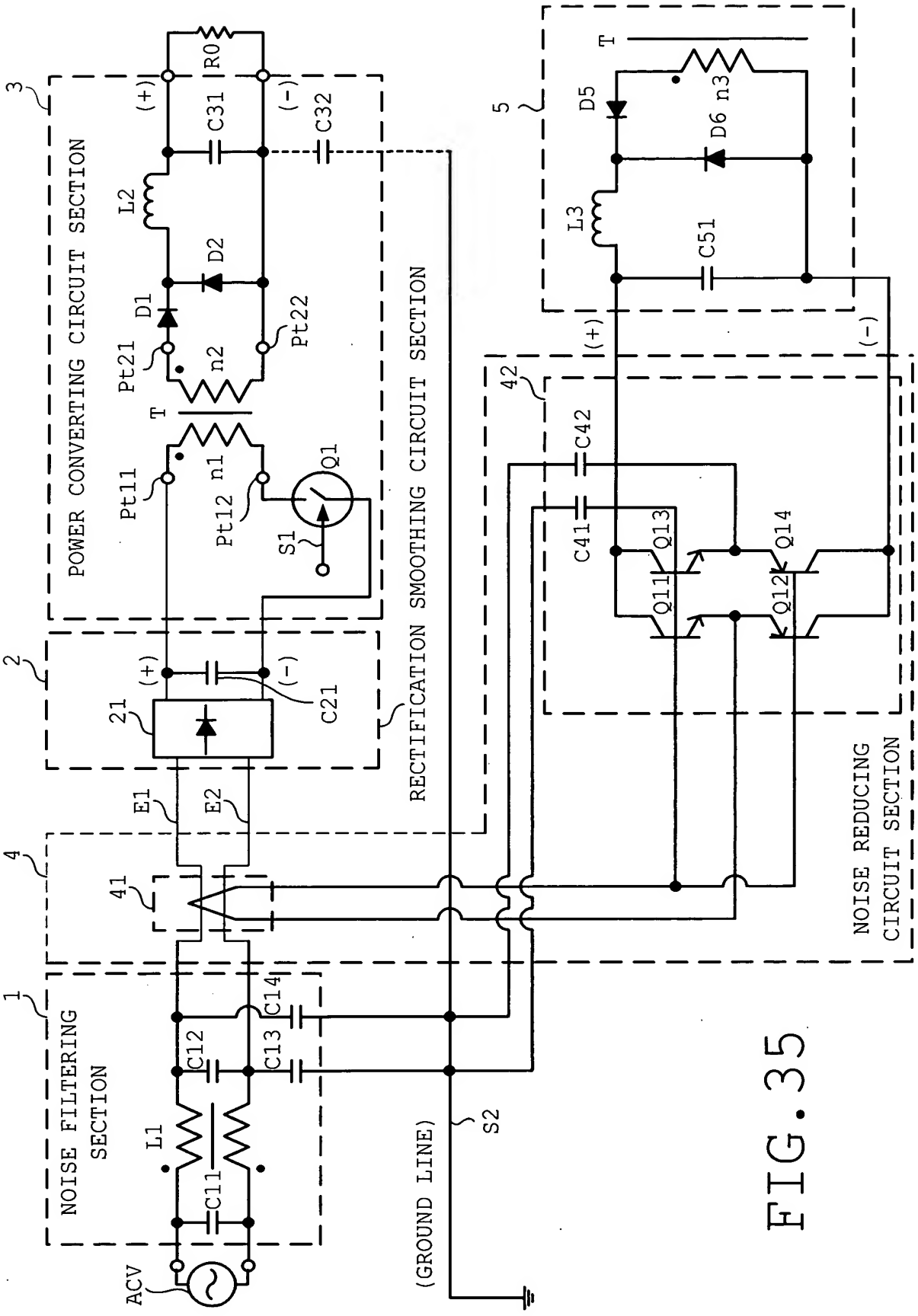

1
NOISE FILTERING SECTION
2
RECTIFICATION SMOOTHING CIRCUIT SECTION
3
POWER CONVERTING CIRCUIT SECTION
4
5
NOISE REDUCING CIRCUIT SECTION
ACV
L1
C11
C12
C13
C14
21
C21
(+)
(-)
E1
E2
41
42
L2
D1
D2
R0
C31
C32
Pt11
Pt12
Pt21
Pt22
n1
n2
T
Q1
S1
S2
(GROUND LINE)
L3
D5
D6
n3
C51
C41
C42
Q11
Q12
Q13
Q14

FIG. 35

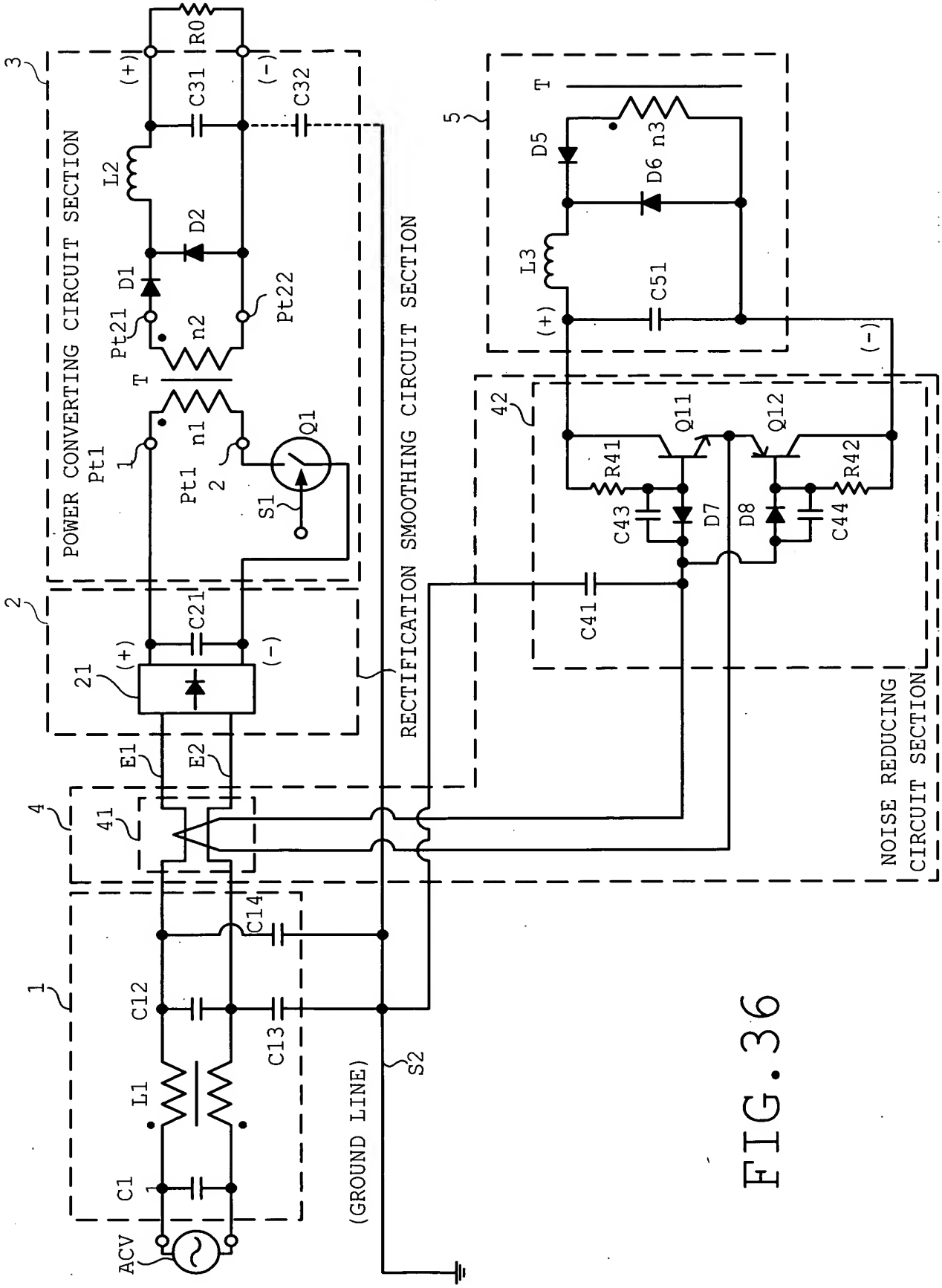

POWER CONVERTING CIRCUIT SECTION
RECTIFICATION SMOOTHING CIRCUIT SECTION
NOISE REDUCING CIRCUIT SECTION
(GROUND LINE)
ACV
C1
L1
C12
C13
C14
S2
E1
E2
41
21
C21
(+)
(-)
Pt1
n1
S1
Q1
T
Pt21
D1
n2
Pt22
D2
L2
C31
C32
R0
D5
D6
n3
L3
C51
42
C41
C43
D7
D8
C44
R41
R42
Q11
Q12

FIG. 36

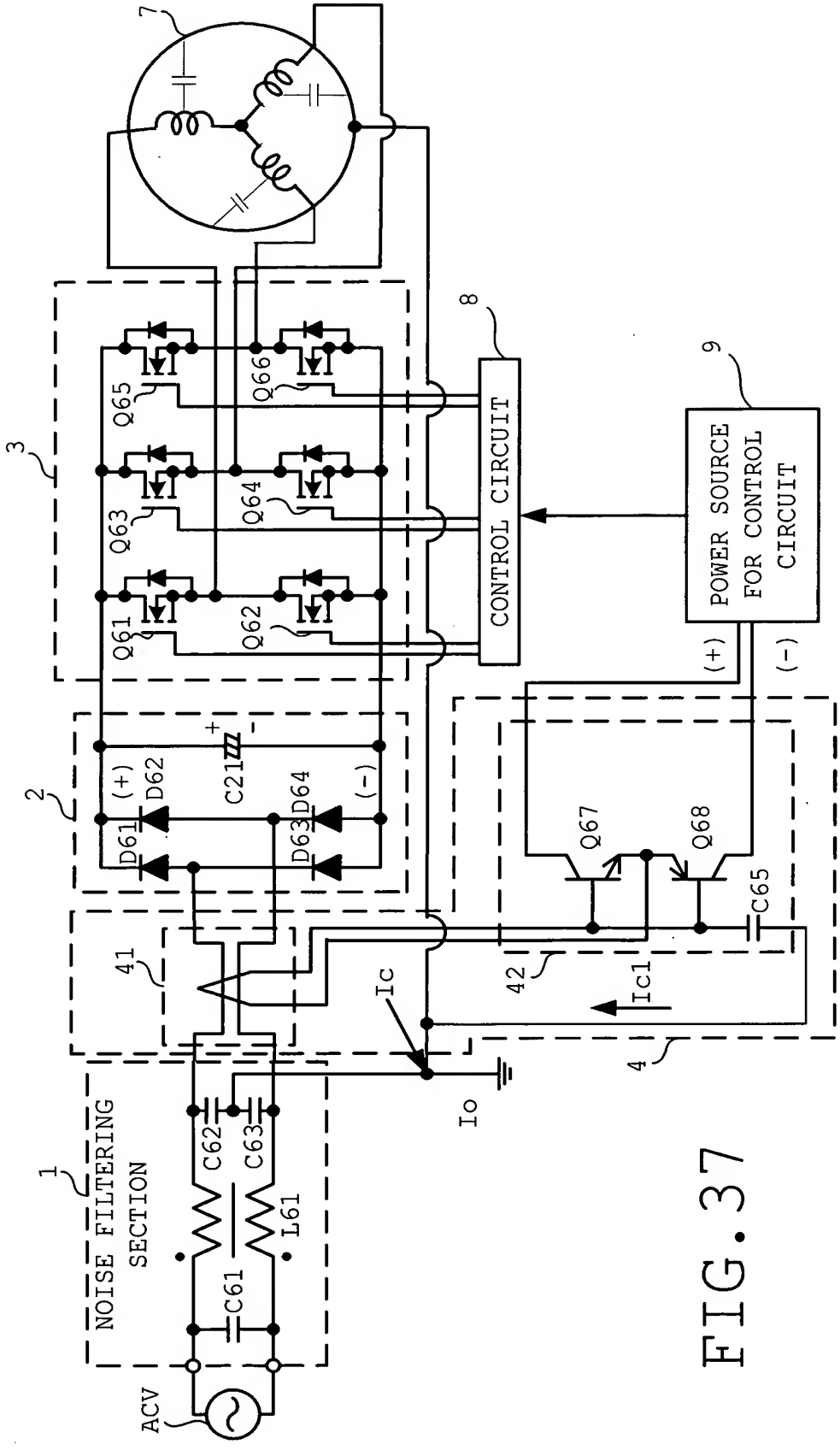

7
8
9
3
Q65
Q66
Q63
Q64
Q61
Q62
CONTROL CIRCUIT
POWER SOURCE FOR CONTROL CIRCUIT
(+)
(-)
2
C21
D62
D64
D61
D63
Q67
Q68
C65
41
42
Ic
Ic1
Io
4
1
NOISE FILTERING SECTION
C62
C63
L61
C61
ACV

FIG. 37

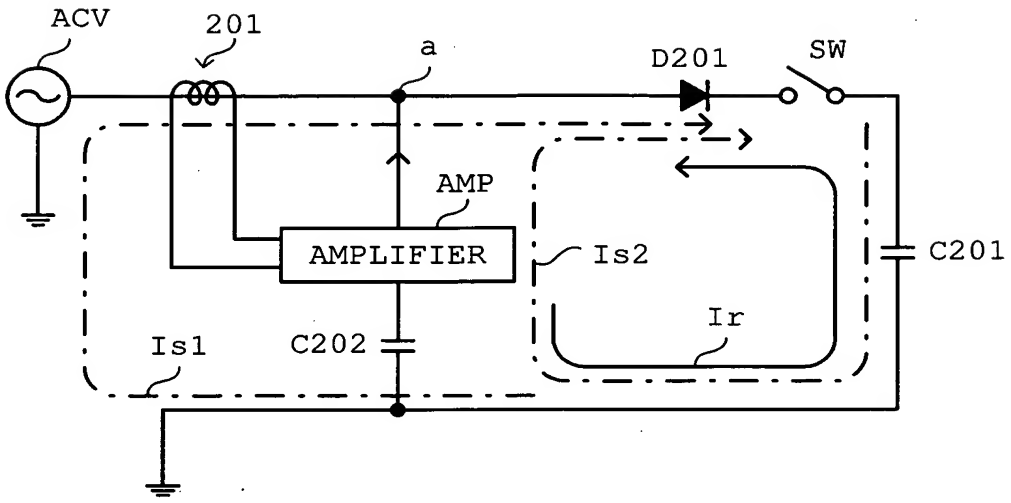


FIG.38A

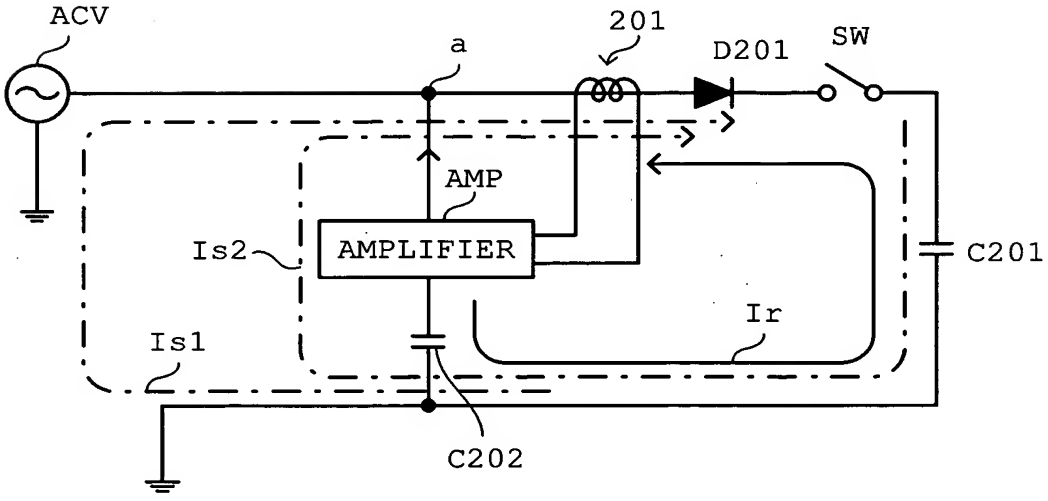


FIG.38B